

Integrating climate intelligence into DHIS2 for predictive MCH nutrition surveillance

From data and predictions to healthier futures



HISP Sri Lanka



Ministry of Health Sri Lanka





The Problem

Early detection and proactive action are essential to reduce the impact of climate variability on maternal and child health.



Climate variability impacts maternal and child health



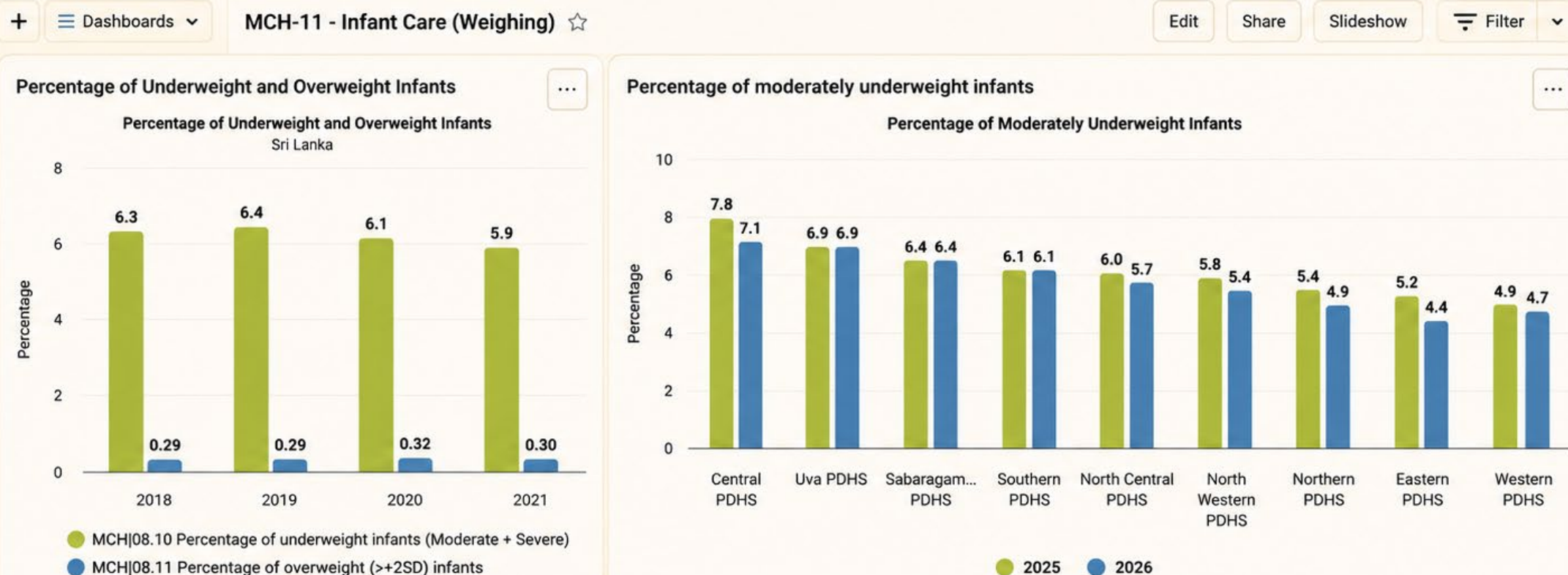
Nutrition indicators fluctuate with environmental conditions



Current systems mainly monitor **historical data**



Need for **proactive planning**

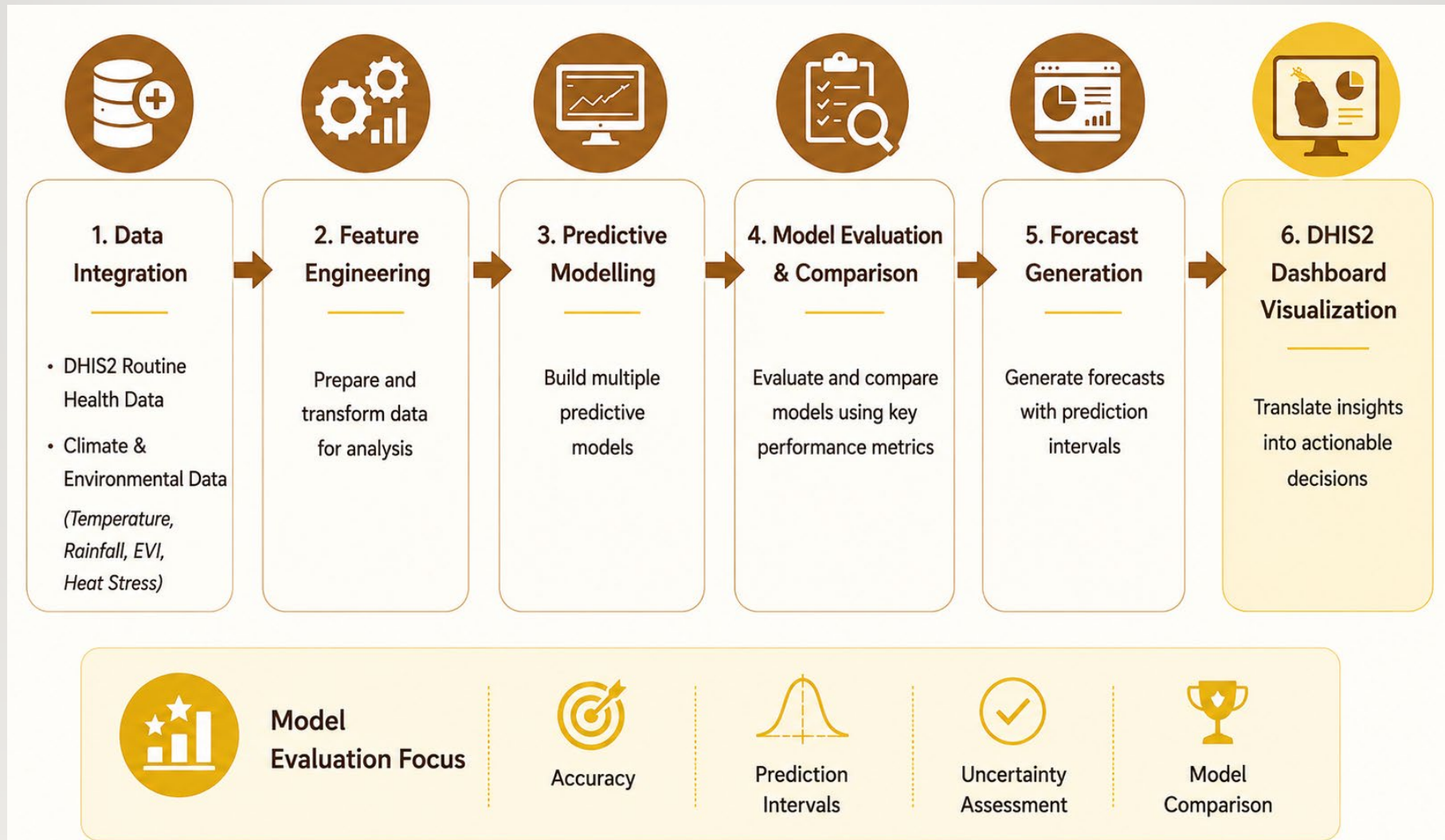


Objective

- To develop and integrate climate-informed predictive dashboards within DHIS2 for district-level maternal and child health surveillance in Sri Lanka.



Workflow



Data & Indicators



Health Indicators

From DHIS2



Underweight Infants

Percentage of underweight infants (Moderate + Severe)



Maternal Low BMI

Percentage of pregnant mothers with BMI < 18.5



Still Birth Rate

Still birth rate per 1,000 total births

Climate & Environmental Covariates

Covariate	Description	Source	Temporal Resolution	Unit
 Precipitation	Total monthly rainfall	CHIRPS / ERA5	Monthly	mm
 Air Temperature	Mean monthly temperature	ERA5	Monthly	°C
 Enhanced Vegetation Index (EVI)	Vegetation health and productivity	MODIS	Monthly	Index
 Heat Stress Index	Heat stress intensity	ERA5-based indices	Monthly	Index

Insights



1 Spatial heterogeneity

- Different districts show different risk profiles.



2 Prediction uncertainty

- MidUpperQ and MidLowerQ communicate uncertainty.



3 Temporal forecasting

- Allows health teams to anticipate deterioration.

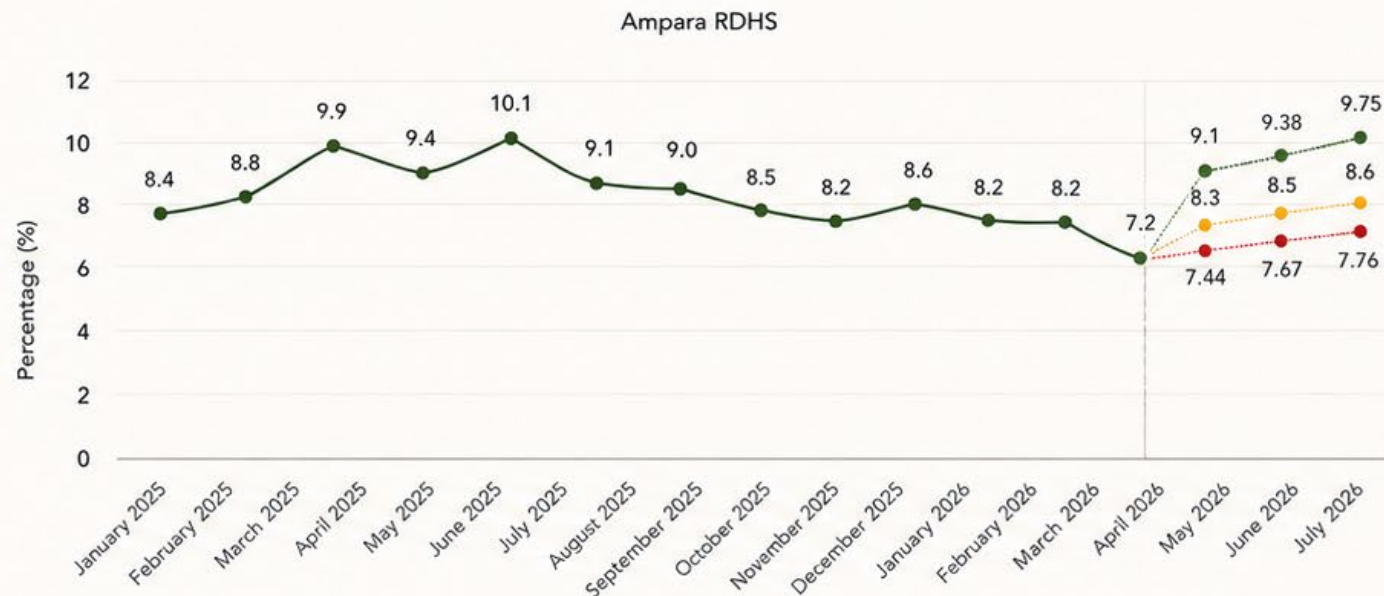


4 Actionability

- Supports:
 - ✓ Nutrition interventions
 - ✓ Resource allocation
 - ✓ Maternal care planning
 - ✓ Early warning systems



Percentage of Underweight Infants - Ampara



- Prediction (MidUpperQ) MCH|08.10 Percentage of underweight infants (Moderate + Severe)
- MCH|08.10 Percentage of underweight infants (Moderate + Severe)
- Prediction (MidLowerQ) MCH|08.10 Percentage of underweight infants (Moderate + Severe)
- Prediction (median) MCH|08.10 Percentage of underweight infants (Moderate + Severe)



How This Helps Health Decision Makers

Turning data and predictions into timely actions for better health outcomes



Anticipate & Prepare

Forecasts help identify districts at risk before indicators worsen, enabling proactive planning.



Early planning of interventions and preventive actions



Target Resources Better

District-level insights support equitable allocation of staff, supplies, and nutrition programs.



Efficient use of limited resources where they are needed most



Strengthen Programs

Monitor predicted trends and observe the impact of programs in near real-time.



Data-driven program adjustments and continuous improvement



Enable Early Warning

Timely alerts for nutrition and maternal health risks support rapid response and risk communication.



Faster response to prevent adverse health outcomes



Support Evidence-Based Decisions

Combines routine health data with climate intelligence for stronger, evidence-informed decisions.



Stronger justification for policies and stakeholder engagement



Empowering health decision makers to **act early**, **target smartly**, and **improve lives**.

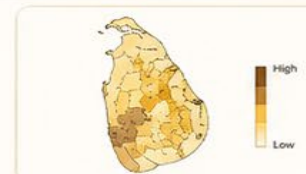


What You Can See in DHIS2



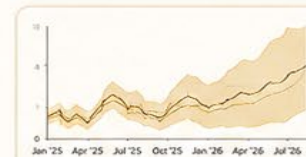
District Risk Maps

Identify high-risk areas at a glance



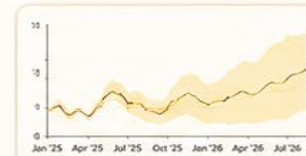
Forecast Trends

Visualize future trajectories and seasonal patterns



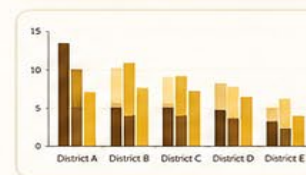
Prediction Intervals

Understand uncertainty to guide decisions



District Comparison

Compare performance across districts



Better information. Timely action.
Healthier communities.



Demonstration